

uncertainty about its future – and ours.’ (page 2). Moreover, Zellen gives the reader a short introduction to some of the theoretical concepts and ideas applied in the coming chapters. In chapter 2 the author turns to a more theoretical analysis of Arctic sovereignty and security. While drawing on insight from the field of geopolitics and international relations theory it is also stated that the external dimension is just one part of the picture. The region is multinational and multiethnic and both ‘internal’ and ‘external’ forces of change must be taken into consideration. In this chapter the focus is on geopolitical characteristics of the region. Chapter 3 addresses the ‘inexorable drive to develop the Arctic (. . .)’ (page 45) or what is referred to as the ‘Arctic imperative’, discussing among other matters, property rights of local inhabitants. Zellen claims that the real threat comes from outsiders ‘who see the Arctic as a resting point, an adventure, a place of employment – in short, a colony’ (page 58). In chapter 4, the author returns to a more global perspective on the region, putting emphasis on the strategic repercussions of the melting ice. Drawing on the concept of geopolitics Zellen considers the profound impact a declining ice cap will have in this respect. In chapter 5 the author asks if conflict is inevitable in the ‘race to stake’ undersea claims. In this chapter the author also discusses the question of winners and losers of climate change, claiming that ‘the people of the Arctic could be the winners of climate change – after they adapt to the new seasonal patterns and rebuild on drier ground.’ In the last chapter entitled ‘The End of the Arctic’ the local perspective is again in the forefront in his concluding reflections. The author addresses the challenges Arctic people and environment will meet due to rapid climate change. However, in the concluding section the opportunities are in the forefront.

Zellen is an important voice in the debate on the future Arctic. One could disagree with statements made in his work, but they give the reader both new insights and a fresh introduction to emerging challenges and opportunities in the ‘new’ Arctic. Zellen engages in one of the central debates in the post cold

war era. How will the future Arctic look like? He is quite optimistic regarding the future of Arctic. In the book Zellen looks at the uncertainty in the region as the shrinking polar ice cap might open up for commercial developments of hydrocarbon at the Arctic seafloor and new sea lanes. This could create environmental disasters for Arctic biota and indigenous people. But, as the author argues the future of the Arctic might also be bright. He suggests that new economic opportunities in part could offset the bad effects of global warming.

Arctic doom, Arctic boom explores the geopolitics of the Arctic from both a contemporary and a historical perspective, claiming that the warming of the earth is transforming our conception of the Arctic. In addition to addressing economic and environmental issues, the book also considers the vital strategic role the future Arctic can have. Such a broad analysis demands a clear structure and point of departure. The author has many points to make. At times this leads to fresh thinking but at times the reader is almost overwhelmed by Zellen’s enthusiasm. This comes to show in statements such as: ‘. . . the people of the Arctic are well prepared for the coming transformation of their world – guided by their strength of spirit and identity, . . .’ (page 164). Moreover, his mixture of information, from military history to climate change to eagerly drawing optimistic scenarios on behalf of the future Arctic, leads the book at times to be a little repetitive. However, overall the arguments put forward in the book are easy to follow.

Zellen aims high and touches upon a wide range of highly interesting approaches on how to grasp and analyse the challenges and opportunities in the region. One could argue that this leads to a lack of analytical depth, but at the same time this wide scope offers its audience easy access, insight and plenty of food for thought into a wide range of pressing topics within the area of post cold war international relations. The book is a central contribution to the debate on the future of the Arctic. (Svein Vigeland Rottem, The Fridtjof Nansen Institute, PO Box 326, 1326 Lysaker, Norway).

LEGACIES AND CHANGE IN POLAR SCIENCES: HISTORICAL, LEGAL AND POLITICAL REFLECTIONS ON THE INTERNATIONAL POLAR YEAR. Jessica M. Shadian and Monica Tennberg (editors). 2009. Farnham: Ashgate (Global Interdisciplinary Studies Series). 232 p. hard cover. ISBN: 978-0-7546-7399-6, £60.00, online: £54.00.

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This new volume of the Ashgate Global Interdisciplinary Studies Series is edited by Jessica Shadian, senior research fellow at the High North Centre for Business and Governance, Bodø Graduate School for Business, Norway, and by Monica Tennberg, research professor at the Arctic Centre, University of Lapland, Finland. Their interest in political science and international relations as well as their involvement in the International Polar Year (IPY) project on ‘Large scale historical exploitation of polar areas (LASHIPA)’ and the Finnish IPY project on community adaptation and vulnerability to climate change in Arctic regions (CAVIAR) led to the idea to discuss the relationship between science and policy from a broad interdisciplinary perspective. They collected nine papers on legacies and change in polar sciences referring to historical, legal and political reflections

around the International Polar Year 2007–2008, and these provide a new and valuable source for further discussions. Some essays are more theoretical, others more descriptive, while legal matters alternate with scientific matters and field stations in the Arctic correspond to the analysis of newspaper clippings on Antarctica. This variety by purpose allows even non-experts to acquaint themselves with this topic. A detailed index of 14 pages helps to switch from one chapter to another corresponding chapter. No such publication is available until today.

In his preface on legacies of polar science Michael Bravo, senior lecturer at the University of Cambridge, states that ‘the challenges of environmental regulation and conservation in the polar regions in the decades ahead will require fresh thinking about the organization of research methodologies. It is unlikely that the same approaches that have enjoyed success in Antarctica will work in the Arctic’ (page xv). Strengthening the different existing science policy instruments in both polar regions would be far more useful.

The editors emphasise in their introduction that ‘the practices and meanings of science changes with political and social change, . . . , as well as the ongoing shifting meanings of polar field stations and research institutes for defining and producing legal norms and policies’ (page 6).

The first part of the book answers the question ‘Whose Arctic?’ by constructing Arctic politics through claims of knowledge. Annika E. Nilsson, Swedish freelance journalist with experience in the science-policy interface in the Arctic, describes why the changing Arctic climate is more than just weather. Today not only ‘quality in theory and methods’ counts, but also the person, ‘who is allowed to participate in knowledge making’ (page 28). Thus indigenous knowledge becomes increasingly important for academic science.

Jessica Shadian investigates the global political change in looking at the history of the IPYs, revisiting politics and science at the poles and analysing the IPY and the governance of science. She presents the role of the science community, indigenous political actors, and private industry and concludes that the recent IPY occurred ‘at a critical juncture in the history of Arctic and global politics’, when it ‘set out to understand climate change’ and at the same time was ‘a noteworthy player in the history of changing Arctic politics and the overall narrative of an emerging post-Westphalian system’ (page 56).

Rob Huebert, associate professor in the Department of Political Science, University of Calgary, Canada deals with science, cooperation and conflict in the polar region. He shows that science in polar regions is not value free and that ‘Science itself does not lead to better international cooperation’ (page 70). Instead, the conditions leading to cooperation have to be examined in the same detail as the physical transformation of the Arctic due to climate change. However, this was not done during the recent (4th) IPY, in which proposals referring to such themes were mostly not funded.

Urban Wråkberg looks at IPY field stations, their functions and meanings in context with the surrounding landscape and international politics. 13 pictures illustrate the variety of stations from the 1st IPY (1882–1883) to the recent NATO surveillance radar station in Vardo (Norway). They ‘relate to their locations on both a micro socioeconomic level as well as an intermediary level of landscape and region’ (page 78). Their choice is often determined by ‘official national “zones of interest”’. In contrast to this, the Antarctic Treaty and the cross border communities of indigenous people blur the idea of political sectors (page 94), which dominates national claims in both polar regions.

The second part of the book deals with the question ‘Whose environment?’ and focuses on science and politics in Antarctica. Julia Jabour teaching Antarctic law and policy in the Institute of Antarctic and Southern Ocean Studies, University of Tasmania, Australia and her colleague Marcus Haward, associate professor in the School of Government and Institute of Antarctic and Southern Ocean Studies discuss Antarctic science, politics and IPY legacies. They give a clear and detailed history of the Scientific Committee on Antarctic Research (SCAR) and its role in the Antarctic Treaty System (ATS). The description showing all facets of the role of SCAR reads very well even for non-experts in this matter.

Professor of international law at the College of Law, Australia National University, Donald R. Rothwell reflects 50 years after the International Geophysical Year (IGY), the IPY and the ATS referring to Antarctica as a ‘unique continent because of the enduring significance that is associated with scientific research, . . . , highlighted by the IGY which in turn provided a catalyst for the negotiation of the Antarctic Treaty’ (page 141), while the freedom of scientific research continues until today. Climate change made people aware of the importance of the polar regions and science, law, politics and community became the means to handle it. New ideas on Antarctic bioprospecting and its regulation are discussed in context with the Japanese ‘scientific’ whaling programme.

Consuelo León Wöppke, director of the Hemisphere and Polar Research Center, Viña del Mar, Chile, introduces the formation and context of the Chilean Antarctic mentality from the colonial era through the IGY. She points to the ‘influence of domestic political and scientific factors on Chile’s contribution to the foundation of the Antarctic Treaty’ (page 145) and presents new material in English for the first time ‘to let the facts speak for themselves,’ which is very exciting to read. She comments that until today Chile’s fixation on national sovereignty referring to overlapping Argentine, Chilean and British interests in Antarctica, militated against the establishment of a first class scientific programme as well as international cooperation.

Coordinator of the Centre for the Study of Geopolitics, Panjab University, Chandigar, India, Sanjay Chaturvedi works on the science-geopolitics interface of biological prospecting in the southern polar region. He warns that ‘Commercial competition is beginning to displace scientific cooperation as driver of policy into the region’ (page 187). In his view it appears that the influence of the ATS is decreasing and that power is shifting to commercial enterprises.

In the last chapter Monica Tennberg summarises the different ideas of the book in three spirals of power and knowledge. She concludes that the ‘polar regions are established as “scientific laboratories” and part of global “environmental panopticons”’ (page 190), while emerging biopolitics focus on the manifold conditions which influence human living in polar regions (page 195). The investigation of the use of knowledge referring to climate change in polar regions ‘is a challenging area of study and complex mix of ethical, economic and political considerations’ (page 199). This should be known by policy makers and financial bodies.

This is the first book dealing with the history and legacies of the International Polar Years and more books on this topic will be published in the near future. They will open up a new field of interdisciplinary research, which should be included in national research programmes. (Cornelia Lüdecke, Institute for the History of Science, Mathematics and Technology, University of Hamburg, Germany.)

THE GREAT OCEAN OF TRUTH: MEMORIES OF HUDSON-70, THE FIRST CIRCUMNAVIGATION OF THE AMERICAS. Peter Wadhams. 2009. Cambridge: Melrose Books. vi+378 p, illustrated, soft cover. ISBN 978-190704030-6. £15.99.
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This story of the 1970 expedition of *Hudson* is really a memoir of a young man for whom the voyage was a primer on the

oceans, their science, and the real world of people outside the sheltered life of a Cambridge schoolboy. The tale is told from the standpoint of a ‘young recruit’ to the marine sciences. In 1969, Peter Wadhams was finishing his degree in physics at Cambridge and was looking for a career. Instead he stumbled into an adventure of a lifetime. It happened that he attended a lecture by geophysicist Edward Bullard on seafloor spreading, and asked him for a job. Bullard declined but recommended Wadhams contact a Canadian, Bosco Loncarevic, who worked at the Bedford Institute of Oceanography, in Nova Scotia. The